Bureau of Land & Water Quality

O&M Newsletter

March 2006

A monthly newsletter for wastewater discharge licensees, treatment facility operators, and associated persons

Table of Contents

Reporting Toxicity Test Results

As you may know, the Department has introduced new forms for reporting of toxicity testing results, including Whole Effluent Toxicity, Analytical Chemistry and Priority Pollutant scan test procedures. Interested wastewater treatment facilities were sent information regarding these changes in January. The materials and forms are available on the Department's web site at www.maine.gov/dep/blwq/docstand/wd/toxics/index.htm.

In this article we'd like to address a few odds and ends about testing and reporting, some new and some reminders.

The dates of samples are important and need to be reported using a standard convention. In most cases, 24-hour composite samples

are used for toxicity testing. A facility should use the calendar day in which the majority of the sample was collected to identify the composite, and avoid a span of days, such as March 11-12. Composite samples should reasonably parallel the period used for recording flow so calculations for discharge quantities will be as consistent as possible. Some parameters in a priority pollutant scan must be tested using a grab sample. These are made within the compositing period, and should be collected during the actual day used to identify the composite sample.

Some chronic whole effluent toxicity tests are conducted over a period of several days, and the effluent and receiving water are renewed during that period. For the purposes of reporting, the first composite sample should be used to identify the test. The associated chemical tests must be conducted on this first composite sample and reported with the whole effluent toxicity test results. Chemical testing done on either effluent or receiving water samples collected during subsequent days does not have to be reported to DEP. These results must, of

course, be kept in the facility's files. The Department recommends that properly preserved subsequent-day samples be retained until after the whole effluent toxicity test is completed and the results are reviewed. If questions arise, the samples can then be tested to determine if the renewal water may have contained something that affected the final results. This is not a common occurrence, but saving a sample is good insurance.

Many times, a specific chemical pollutant will not be detected in a sample. Such a result is to be reported as "<" (less than) the concentration the laboratory used as its detection level. This may be different than the Reporting Limit the DEP has published as the minimum performance standard for a parameter. In many cases, laboratories are able to report not finding concentrations of various pollutants at levels below the minimum specified by DEP. Less than values should not be "rounded up" to the DEP Reporting Limit, but instead reported at the detection level actually used by the laboratory. The Department would like to get the best information possible for the scientific value it may have. However, concentrations below the Reporting Limit will not be used for regulatory purposes such as determining exceedences of water quality criteria or setting effluent limits in permits. The Department's rules are clear that when results are reported below the DEP-specified Reporting Limit, the facility will be considered to be in compliance.

Finally, the Department accepts and uses all laboratory results as being valid and representative of the discharge. If for any reason you have questions about the quality of laboratory information, it is essential you clearly identify your concerns at the time you submit your reports. Probably the most common problems involve a test that did not fully meet its quality assurance goals or had sampling handling issues. Results having such problems should be clearly qualified and explained on the reporting form itself or not reported at all. Whether a result is qualified or not reported, supporting information must be provided explaining the problem. With some test procedures like whole effluent toxicity tests or priority pollutant scans, parts of the analysis may have problems while others parts may be satisfactory. In these cases it is important to provide the technical information to ensure full credit can be given for the work done. As problems are investigated, supplemental information can be submitted at a later date, if necessary.

As always, if you have questions about this or any DEP program, please call on your facility's assigned inspector.

Dennis Merrill

Ten Steps to Maintain Critical Wastewater Service and Protect Public Health in an Emergency

Have you taken these Ten Steps to Maintain Critical Wastewater Services and Protect Public Health in an Emergency? A poster was developed by a group of national experts under a cooperative agreement between the U.S. Environmental Protection Agency and the National Environmental Training Center for Small Communities, a National Environmental Services Center (NESC) program at West Virginia University list the ten steps as follows.

Step 1 – Make an emergency contact list that includes all essential contacts.

- Post by each telephone and distribute to all staff.
- Review and update the list quarterly and as changes occur.
- Include contacts needed to inform your community of emergencies

Step 2 – Inspect your facilities daily.

- Inspect treatment facilities (e.g., lift/pump stations, outfalls, chemical storage areas, fences etc.)
- Use a security checklist to log results.
- Take immediate action to address vulnerabilities.

Step 3 – Make security and preparedness everyone's job.

- Leaders must set a good example toward security.
- Make all staff accountable for their security actions.
- Implement a plan to communicate regularly with employees, emergency responders, and customers about security issues.
- Have plans to increase security when risks are elevated.

Step 4 – Limit and control access to facilities.

- Routinely lock all doors and gates.
- Remove keys and lock vehicles.
- Limit key access to essential personnel.
- Keep track of who has keys.

Step 5 – Establish relationships with emergency personnel and neighboring facilities.

- Involve emergency personnel in your emergency planning (e.g., fire, police, hospitals, etc.)
- Establish mutual aid agreements with neighboring facilities, as appropriate.
- Familiarize emergency personnel with all aspects and vulnerabilities of your system.

Step 6 – Practice safe chemical handling and usage.

- Control chemical deliveries and be aware of delivery dates.
- Store chemicals safely and securely.
- Dispose of chemicals properly.

Step 7 – Secure your records and maps.

- Update and organize critical information.
- Control access to records and maps.
- Backup computer files regularly.
- Install updated virus protection and firewall on computers.
- Secure deeds, titles, reports, etc. with copies or protection from fire and water damage.

Step 8 – Assess threats and identify vulnerabilities.

- Prioritize key threats and vulnerabilities.
- Harden facilities that are vulnerable to security threats and natural disasters.
- Take appropriate steps to prevent, detect, delay and deter intruders.
- Consider security and emergency preparedness when making system changes.
- Review security priorities annually.

Step 9 – Have an emergency response plan for your wastewater system.

- Know key steps to take in an emergency.
- Identify sources of backup equipment and assistance.
- Train staff on the plan, and test it with emergency personnel and neighboring facilities.
- Practice, practice, practice.
- Update the plan annually.

Step 10 – Educate staff, elected officials, and community members about how they can protect their wastewater system.

- Do not place hazardous materials or objects in collection systems.
- Report suspicious behavior and vandalism immediately.
- Recognize and report abnormal situations.
- Use neighborhood watch programs to help protect collection systems and other wastewater assets.

If you would like a copy of the poster, please contact Don Albert at 207-287-7767.

Don Albert

For Practice

1. If the supernatant from an aerobic digester has high solids content and is returned to the headworks of the system, how will it most likely affect the activated sludge aeration basin?
   a. Increase the DO level.
   b. Increase the MCRT.
   c. Increase the F/M ratio.
   d. Increase the removal efficiency.

2. The concentration of dissolved oxygen that may be held in water
   a. Increases as temperature increased
   b. decreases as temperature decreases
   c. is independent of temperature
   d. increases as temperature decreases

3. The type of solids that is the most difficult to remove using a standard biological treatment process is.
   a. Organic dissolved
   b. Inorganic dissolved
   c. Organic suspended
   d. Organic dissolved

4. You have a positive displacement pump that delivers 375 gpm against a head of 75 feet with an overall 75% efficiency. If you pay 10.8¢ per kwh for electricity, how much will it cost you to run the pump 15 hours per day for a year?
   a. $8,765
   b. $6,382
   c. $4,482
   d. $2,615

Approved Training

March 14, 2006 in North Vassalboro, ME – The Impact of Water Treatment Practices on Wastewater Treatment Plant Operations - sponsored by JETCC – 207-253-8020 – Approved for 6 hours
*****
March 14, 2006 in Farmington, ME – Maine Driving Dynamics - sponsored by MRWA = (207) 729-6569 – Approved for 5 safety hours
*****
March 14, 2006 in Old Orchard Beach, ME – Pump Stations O & M - sponsored by WPETC (207) 729-6569 – Approved for 5 hours
*****
March 21, 2006 in Scarborough, ME – Maine Driving Dynamics - sponsored by MRWA = (207) 729-6569 – Approved for 5 safety hours
*****
March 21, 2006 in Old Orchard Beach, ME – Care & Maintenance of Laboratory Equipment and Preparing for a Lab Audit - sponsored by WPETC (207) 729-6569 – Approved for 5 hours
*****
March 23, 2006 in Gardiner, ME – Maine Driving Dynamics - sponsored by MRWA = (207) 729-6569 – Approved for 5 safety hours
*****
March 27, 2006 in Portland, ME – Nitrification & Denitrification in Wastewater Facilities - sponsored by JETCC – 207-253-8020 – Approved for 6 hours
*****
March 28, 2006 in Norway, ME – Instrumentation Calibration Basics - sponsored by JETCC – 207-253-8020 – Approved for 6 hours

March 28, 2006 in Bangor, ME – Maine Driving Dynamics - sponsored by MRWA = (207) 729-6569 – Approved for 5 safety hours
*****
March 30, 2006 in Easton, ME – Maine Driving Dynamics - sponsored by MRWA = (207) 729-6569 – Approved for 5 safety hours
*****
April 4, 2006 in Brewer, ME – A Day in the Wastewater Lab - sponsored by JETCC – 207-253-8020 – Approved for 6 hours
*****
April 12, 2006 in Orono, ME – Microsoft Access for Water and Wastewater Operators - sponsored by JETCC – 207-253-8020 – Approved for 6 hours
*****
April 26, 2006 in Saco, ME – Excavation & Trenching Safety - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
April 27 & May 4, 2006 in Old Orchard Beach, ME – Anatomy of Collection Systems: & NEWEA Collection System Voluntary Certification Grades I-IV Exam - sponsored by WPETC (207) 729-6569 – Approved for 10 hours
*****
April 27, 2006 in Bangor, ME – Excavation & Trenching Safety - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
April 27, 2006 in Lewiston, ME – Water & Wastewater Technology Seminar - sponsored by MRWA – 207-729-6569 – Approved for 3 hours
*****
May 3, 2006 in Freeport, ME – Residuals Management through Compound Loop Systems - sponsored by JETCC – 207-253-8020 – Approved for 6 hours
*****
May 9, 2006 in Topsham, ME – Excavation & Trenching Safety - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
May 23, 2006 in Bangor, ME – Care & Maintenance of Laboratory Equipment and Preparing for a Lab Audit - sponsored by WPETC (207) 729-6569 – Approved for 5 hours
*****
June 20, 2006 in Bangor, ME – Pump Stations O & M - sponsored by WPETC (207) 729-6569 – Approved for 5 hours
*****
July 18, 2006 in Saco, ME – Uniform traffic Control & Flagging - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
July 20, 2006 in Bangor, ME – Uniform traffic Control & Flagging - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
July 27, 2006 in Presque Isle, ME – Uniform traffic Control & Flagging - sponsored by WPETC (207) 729-6569 – Approved for 3.5 hours
*****
Note:
JETCC stands for Joint Environmental Training Coordinating Committee
MRWA stands for Maine Rural Water Association
MWWCA stands for Maine Wastewater Control Association
NEIWPCC stands for New England Interstate Water Pollution Control Commission
WPETC stands for Wright Pierce Environmental Training Center.

Spring 2006 Exam

The Spring wastewater operator certification exam, it will be given on May 10, 2006 in the usual locations. This is the first exam that will be administered through the JETCC Office. Applications ***must*** be postmarked by March 24, 2006 or in JETCC's hands by March 27, 2006.

Dick Darling

Answers to *For Practice:*

1. (c) High solids in the supernatant will add food to the system, which will increase the F/M ratio.
2. (d) Colder water can hold more dissolved oxygen.
3. (b) Activated sludge systems remove dissolved organic solids by absorbing that material into the cells of the organisms in the sludge. Organic and inorganic suspended solids are removed by physical settling in the secondary clarifiers. There is, however, no biological or physical removal of dissolved, inorganic solids.
4. (c) Horsepower required = (flow in gpm % head in feet)/ (efficiency % 3960)

   Horsepower requires = (375 % 75)/ (0.75 % 3960) = 10.16 hp
   1 hp = .746 kW: 10.16 hp = 7.58 kW
   7.58 kw % 15 hr/day % 365 days/year = 41,500kWh
   41,500 kWh % $0.108/kWh = $4,482

2005 CSO Annual Progress Reports are in.

To say that this was a wet year is somewhat of an understatement! Maine's 41 Combined Sewer Overflow (CSO) communities reported an average yearly precipitation of 65", 25% above average. This far exceeds the norm of 45" and as you would expect caused a number of communities to report above average and even record overflows for 2005.

Before Maine communities embarked on their CSO abatement programs, initial overflow volumes were estimated at over 5.2 billion gallons. Since then, the volume and frequency of overflows has continued a downward trend influenced by the completed CSO abatement projects and the variances in precipitation and storm intensity. Here's a listing of precipitation averages and CSO volumes discharged over the last four year.

Year	Precipitation (Inches)	CSO Volume (BG)
2002	45	2.7
2003	46	1.8
2004	45	1.5
2005	65	3.0

It is extremely difficult to compare data from one year to the next due to the variations in ground water elevation, snowmelt, storm intensity, storm duration, as well as the time of year that they occur. 2005 was an abnormal year with very intense storms. Although CSO volume was up for 2005, it was not up as high as one might have expected it to be and shows the progress that these communities are making.

Two of our CSO communities have completed their abatement programs and were re-licensed in 2005 without any CSO language in their permit, dropping the number of CSO communities to 39. 2006 promises to be another good year in CSO abatement as a number of communities are completing significant projects.

John True